Page Titles and Page Breaks

This document describes various ways of controlling page breaks in a report and the output of page titles at the top of each report page.

The following topics are covered:

- Default Page Title
- Suppress Page Title - NOTITLE Option
- Define Your Own Page Title - WRITE TITLE Statement
- Logical Page and Physical Page
- Page Size - PS Parameter
- Page Advance - EJ Parameter
- Page Advance - EJECT and NEWPAGE Statements
- Page Trailer - WRITE TRAILER Statement
- AT TOP OF PAGE Statement
- AT END OF PAGE Statement
- Further Examples

Default Page Title

For each page output via a DISPLAY or WRITE statement, Natural automatically generates a single default title line. This title line contains the page number, the date and the time of day.

```
WRITE 'HELLO'
END
```

The above program produces the following output with default page title:

```
Page       1                                              97-08-14  18:27:35

HELLO
```

Suppress Page Title - NOTITLE Option

If you wish your report to be output without page titles, you add the keyword NOTITLE to the DISPLAY or WRITE statement.

```
WRITE NOTITLE 'HELLO'
END
```

The above program produces the following output without page title:

```
HELLO
```

Define Your Own Page Title - WRITE TITLE Statement

If you wish a page title of your own to be output instead of the Natural default page title, you use the statement WRITE TITLE.

The following topics are covered below:

- Specifying Text for Your Title
- Specifying Empty Lines after the Title
- Title Justification and/or Underlining

Specifying Text for Your Title

With the statement WRITE TITLE, you specify the text for your title (in apostrophes).

```
WRITE TITLE 'THIS IS MY PAGE TITLE'
WRITE 'HELLO'
END
```

```
                        THIS IS MY PAGE TITLE
  HELLO
```

Specifying Empty Lines after the Title

With the SKIP option of the WRITE TITLE statement, you can specify the number of empty lines to be output immediately below the title line. After the keyword SKIP, you specify the number of empty lines to be inserted.

```
WRITE TITLE 'THIS IS MY PAGE TITLE' SKIP 2
WRITE 'HELLO'
END
```

```
                        THIS IS MY PAGE TITLE


  HELLO
```

SKIP is not only available as part of the WRITE TITLE statement, but also as a stand-alone statement.

Title Justification and/or Underlining

By default, the page title is centered on the page and not underlined.

The WRITE TITLE statement provides the following options which can be used independent of each other:

Option	Effect
LEFT JUSTIFIED	Causes the title to be displayed left-justified.
UNDERLINED	Causes the title to be displayed underlined. The underlining runs the width of the line size (see also Natural profile and session parameter LS). By default, titles are underlined with a hyphen (-). However, with the UC session parameter you can specify another character to be used as underlining character (see Underlining Character for Titles and Headers).

The following example shows the effect of the LEFT JUSTIFIED and UNDERLINED options:

```
WRITE TITLE LEFT JUSTIFIED UNDERLINED 'THIS IS MY PAGE TITLE' SKIP 2
  WRITE 'HELLO'
  END
```

```
  THIS IS MY PAGE TITLE
  --------------------------------------------------------------

  HELLO
```

The WRITE TITLE statement is executed whenever a new page is initiated for the report.
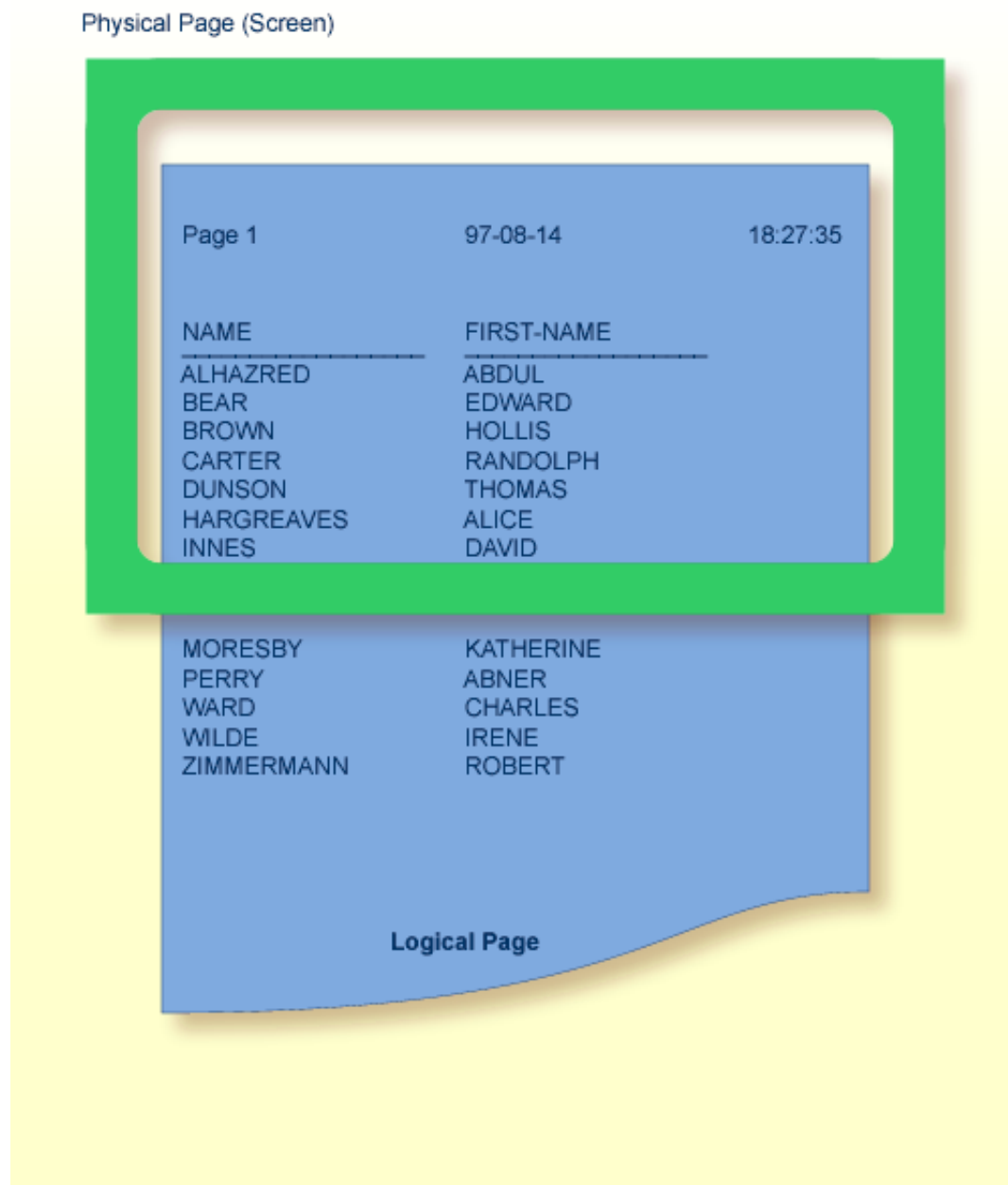
Logical Page and Physical Page

A *logical page* is the output produced by a Natural program.

A *physical page* is your terminal screen on which the output is displayed; or it may be the piece of paper on which the output is printed.

The size of the logical page is determined by the number of lines output by the Natural program.

If more lines are output than fit onto one screen, the logical page will exceed the physical screen, and the remaining lines will be displayed on the next screen.

Physical Page (Screen)

```
Page 1                 97-08-14              18:27:35


NAME                   FIRST-NAME
---------------------  ---------------------
ALHAZRED               ABDUL
BEAR                   EDWARD
BROWN                  HOLLIS
CARTER                 RANDOLPH
DUNSON                 THOMAS
HARGREAVES             ALICE
INNES                  DAVID

MORESBY                KATHERINE
PERRY                  ABNER
WARD                   CHARLES
WILDE                  IRENE
ZIMMERMANN             ROBERT
```

Logical Page

If information you wish to appear at the bottom of the screen (for example, output created by a WRITE TRAILER or AT END OF PAGE statement) is output on the next screen instead, reduce the logical page size accordingly (with the session parameter PS, which is discussed below).

Page Size - PS Parameter

With the parameter PS, you determine the maximum number of lines per (logical) page for a report.

When the number of lines specified with the PS parameter is reached, a page advance occurs (unless page advance is controlled with a NEWPAGE or EJECT statement; see Page Advance Controlled by EJ Parameter below).

The PS parameter can be set either at session level with the system command GLOBALS, or within a program with the following statements:

- at report level:
  - ○ `FORMAT PS=nn`
- at statement level:
  - ○ `DISPLAY (PS=nn)`
  - ○ `WRITE (PS=nn)`
  - ○ `WRITE TITLE (PS=nn)`
  - ○ `WRITE TRAILER (PS=nn)`
  - ○ `INPUT (PS=nn)`

Page Advance

A page advance can be triggered by one of the following methods:

- Page Advance Controlled by EJ Parameter
- Page Advance Controlled by EJECT or NEWPAGE Statements
- Eject/New Page when less than *n* Line Left

These methods are discussed below.

Page Advance Controlled by EJ Parameter

With the session parameter EJ, you determine whether page ejects are to be performed or not. By default, EJ=ON applies, which means that page ejects will be performed as specified.

If you specify EJ=OFF, page break information will be ignored. This may be useful to save paper during test runs where page ejects are not needed.

The EJ parameter can be set at session level with the system command GLOBALS; for example:

```
GLOBALS EJ=OFF
```

The EJ parameter setting is overriden by the EJECT statement.

Page Advance Controlled by EJECT or NEWPAGE Statements

Page Advance without Title/Header on Next Page

The EJECT statement causes a page advance *without* a title or header line being generated on the next page. A new physical page is started *without* any top-of-page or end-of-page processing being performed (for example, no WRITE TRAILER or AT END OF PAGE, WRITE TITLE, AT TOP OF PAGE or *PAGE-NUMBER processing).

The EJECT statement overrides the EJ parameter setting.

Page Advance with End/Top-of-Page Processing

The NEWPAGE statement causes a page advance *with* associated end-of-page and top-of-page processing. A trailer line will be displayed, if specified. A title line, either default or user-specified, will be displayed on the new page (unless the NOTITLE option has been specified in a DISPLAY or WRITE statement).

If the NEWPAGE statement is not used, page advance is automatically controlled by the setting of the PS parameter; see Page Size - PS Parameter above).

Eject/New Page when less than *n* Line Left

Both the NEWPAGE statement and the EJECT statement provide a WHEN LESS THAN *n*LINES LEFT option. With this option, you specify a number of lines *n*. The NEWPAGE/EJECT statement will then be executed if - at the time the statement is processed - less than *n* lines are available on the current page.

Example:

```
FORMAT PS=55
...
NEWPAGE WHEN LESS THAN 7 LINES LEFT
...
```

In this example, the page size is set to 55 lines.

If only 6 or less lines are left on the current page at the time when the NEWPAGE statement is processed, the NEWPAGE statement is executed and a page advance occurs.
If 7 or more lines are left, the NEWPAGE statement is not executed and no page advance occurs; the page advance then occurs depending on the PS parameter, that is, after 55 lines.

New Page with Title

The NEWPAGE statement also provides a WITH TITLE option. If this option is not used, a default title will appear at the top of the new page or a WRITE TITLE statement or NOTITLE clause will be executed.

The WITH TITLE option of the NEWPAGE statement allows you to override these with a title of your own choice. The syntax of the WITH TITLE option is the same as for the WRITE TITLE statement.

Example:

```
 NEWPAGE WITH TITLE LEFT JUSTIFIED 'PEOPLE LIVING IN BOSTON:'
```

The following program illustrates the use of the PS parameter and the NEWPAGE statement. Moreover, the system variable *PAGE-NUMBER is used to display the current page number.

```
** Example Program 'NEWPAX01'
DEFINE DATA LOCAL
1 VIEWEMP OF EMPLOYEES
   2 NAME
   2 CITY
   2 DEPT
END-DEFINE
FORMAT PS=20
READ (5) VIEWEMP BY CITY STARTING FROM 'M'
  DISPLAY NAME 'DEPT' DEPT 'LOCATION' CITY
  AT BREAK OF CITY
    NEWPAGE WITH TITLE LEFT JUSTIFIED
      'EMPLOYEES BY CITY - PAGE:' *PAGE-NUMBER
  END-BREAK
END-READ
END
```

Note the position of the page breaks and the title line printed on the new page:

```
   Page      1                                        97-08-19  18:27:35

          NAME            DEPT        LOCATION
   -------------------- ------ --------------------

   FICKEN                TECH10 MADISON
   KELLOGG               TECH10 MADISON
   ALEXANDER             SALE20 MADISON
```

```
   EMPLOYEES BY CITY - PAGE:      2
           NAME            DEPT        LOCATION
   -------------------- ------ --------------------

   DE JUAN               SALE03 MADRID
   DE LA MADRID          PROD01 MADRID
```

Page Trailer - WRITE TRAILER Statement

- Specifying a Page Trailer
- Considering Logical Page Size
- Page Trailer Justification and/or Underlining

Specifying a Page Trailer

The WRITE TRAILER statement is used to output text (in apostrophes) at the bottom of a page.

```
 WRITE TRAILER 'THIS IS THE END OF THE PAGE'
```

The statement is executed when an end-of-page condition is detected, or as a result of a SKIP or NEWPAGE statement.

Considering Logical Page Size

As the end-of-page condition is checked only *after* an entire DISPLAY or WRITE statement has been processed, it may occur that the logical page size (that is, the number of lines output by a DISPLAY or WRITE statement) causes the physical size of the output page to be exceeded before the WRITE TRAILER statement is executed.

To ensure that a page trailer actually appears at the bottom of a physical page, you should set the logical page size (with the PS session parameter) to a value less than the physical page size.

Page Trailer Justification and/or Underlining

By default, the page trailer is displayed centered on the page and not underlined.

The WRITE TRAILER statement provides the following options which can be used independent of each other:

Option	Effect
LEFT JUSTIFIED	Causes the page trailer to be displayed left-justified.
UNDERLINED	Causes the page trailer to be displayed underlined. The underlining runs the width of the line size (see also Natural profile and session parameter LS). By default, titles are underlined with a hyphen (-). However, with the UC session parameter you can specify another character to be used as underlining character (see Underlining Character for Titles and Headers).

The following example shows the use of the LEFT JUSTIFIED and UNDERLINED options of the WRITE TRAILER statement:

```
WRITE TRAILER LEFT JUSTIFIED UNDERLINED 'THIS IS THE END OF THE PAGE'
```

AT TOP OF PAGE Statement

The AT TOP OF PAGE statement is used to specify any processing that is to be performed whenever a new page of the report is started.

If the AT TOP OF PAGE processing produces any output, this will be output below the page title (with a skipped line in between).

By default, this output is displayed left-justified on the page.

AT END OF PAGE Statement

The AT END OF PAGE statement is used to specify any processing that is to be performed whenever an end-of-page condition occurs.

If the AT END OF PAGE processing produces any output, this will be output after any page trailer (as specified with the WRITE TRAILER statement).

By default, this output is displayed left-justified on the page.

The same considerations described above for page trailers regarding physical and logical page sizes and the number of lines output by a DISPLAY or WRITE statement also apply to AT END OF PAGE output.

Further Examples

Examples of WRITE TITLE, WRITE TRAILER, AT TOP OF PAGE, AT END OF PAGE and SKIP Statements

See the following example programs in library SYSEXPG:

- WTITLX01
- DISPLX21
- ATENPX01
- ATTOPX01
- SKIPX01
- SKIPX02

Example of NOTITLE Option

See the following example program in library SYSEXPG:

- DISPLX20

Example of NEWPAGE and EJECT Statements

See the following example program in library SYSEXPG:

- NEWPAX02